AMENDMENTS TO THE CLAIMS

1. (Withdrawn) In a fuel cell power supply unit having an electrochemical fuel cell, an electric double layer capacitor, which is substantially directly connected with the fuel cell, and an excess amount supply device that is configured to supply an excess supply amount of a reacting gas supplied to the fuel cell a method for supplying an excess supply amount of reacting gas, the method comprising:

determining a voltage of the fuel cell after a variation of electrical load based on a synthetic output characteristic of the fuel cell and the capacitor, originated from an equilibrium point on a current-voltage characteristic of the fuel cell at a predetermined output state and a predetermined width of the variation of electrical load;

obtaining a current corresponding to said voltage;

obtaining a reacting gas supply amount corresponding to said current; and

supplying the reacting gas in an amount which includes an excess supply amount with the equilibrium reacting gas supply amount before the variation of electrical load.

2. (Withdrawn) The method of claim 1, wherein the reacting gas amount supplied to the fuel cell in said output state is determined based on the current-voltage characteristics of said fuel cell, the current-voltage characteristics of the capacitor, and the equilibrium reacting gas supply amount characteristics corresponding to the current-voltage characteristics of the fuel cell.

3. (Withdrawn) The method of claim 1, wherein the current-voltage characteristics of said fuel cell depend on an internal resistance of the fuel cell or an average internal resistance of the fuel cell within a predetermined output current range.

4. (Withdrawn) The method of claim 1, wherein the current-voltage characteristics of said electric double layer capacitor depends on the internal resistance of said electric double layer capacitor.

5. (Withdrawn) The method of claim 1, further comprising a reacting gas supply system, wherein the reacting gas supply amount supplied from said reacting gas supply system to the fuel cell is determined such that a response time of the reacting gas supply system reaching from

the reacting gas amount at said predetermined output state to the equilibrium reacting gas amount after the variation of electrical load is shorter than an output assistance operation period by said electric double layer capacitor.

6. (Withdrawn) The method of claim 2, wherein the reacting gas supply amount supplied from said reacting gas supply system to the fuel cell is determined such that a response time reaching from the reacting gas amount at said predetermined output state to the equilibrium reacting gas amount after the variation of electrical load is shorter than the output assistance operation period by said electric double layer capacitor.

7. (Withdrawn) The method of claim 3, wherein the reacting gas supply amount supplied from said reacting gas supply system to the fuel cell is determined such that a response time reaching from the reacting gas amount at said predetermined output state to the equilibrium reacting gas amount after the variation of electrical load is shorter than the output assistance operation period by said electric double layer capacitor.

8. (Withdrawn) The method of claim 4, wherein the reacting gas supply amount supplied from said reacting gas supply system to the fuel cell is determined such that a response time reaching from the reacting gas amount at said predetermined output state to the equilibrium reacting gas amount after the variation of electrical load is shorter than the output assistance operation period by said electric double layer capacitor.

9. (Withdrawn) The method of claim 5, wherein the response time of said reacting gas supply system is set below an output assistance operation period by said output assistance operation period of said electric double layer capacitor.

10. (Withdrawn) The method of claim 6, wherein the response time of said reacting gas supply system is set below output assistance operation period of said electric double layer capacitor.

11. (Withdrawn) The method of claim 7, wherein the response time of said reacting gas supply system is set below an output assistance operation_period by said output assistance operation period of said electric double layer capacitor.

12. (Withdrawn) The method of claim 8, wherein the response time of said reacting gas supply system is set below an output assistance operation_period by said output assistance operation period of said electric double layer capacitor.

13. (Withdrawn) The method of claim 5, wherein a capacitance of said electric double layer capacitor has a value in which the response time of said reacting gas supply system is set below an output assistance operation period by said output assistance operation period of said electric double layer capacitor.

14. (Withdrawn) The method of claim 6, wherein a capacitance of said electric double layer capacitor has a value in which the response time of said reacting gas supply system is set below an output assistance operation period by said output assistance operation period of said electric double layer capacitor.

15. (Withdrawn) The method of claim 7, wherein a capacitance of said electric double layer capacitor has a value in which the response time of said reacting gas supply system is set below an output assistance operation_period by said output assistance operation period of said electric double layer capacitor.

16. (Withdrawn) The method of claim 8, wherein a capacitance of said electric double layer capacitor has a value in which the response time of said reacting gas supply system is set below an output assistance operation_period by said output assistance operation period of said electric double layer capacitor.

17. (Withdrawn) The method of claim 1, in which the reacting gas supply amount to said fuel cell is obtained based on a target generation command value after calculating a target output command value for a driving motor and a target generation command value of said fuel cell based on input signals indicating a driving state of a vehicle obtained at predetermined intervals, wherein the width of the variation of electrical load obtained from the difference between two successively obtained target generation command values is controlled so as to be within a predetermined range of the difference.

18. (Withdrawn) A fuel cell power supply unit comprising an electrochemical fuel cell and an electric double layer capacitor, both of which are substantially directly connected, and a current limiting device provided between the fuel cell and the capacitor, wherein the fuel cell power supply unit obtains an excess supply amount of a reacting gas supplied to the fuel cell obtained by determining a voltage of the fuel cell after the variation of electrical load based on a synthetic output characteristics of the fuel cell and the capacitor, originated from a equilibrium point on a current-voltage characteristics of the fuel cell at a predetermined output state and a predetermined width of a variation of electrical load, obtains a current corresponding to said voltage, obtains a reacting gas supply amount corresponding to said current, and supplies the reacting gas in an amount which includes an excess supply amount with the equilibrium reacting gas supply amount before the variation of electrical load; and said output limiting device charges said electric double layer capacitor while limiting the output current from the fuel cell, and when the potential difference between said fuel cell and said electric double layer capacitor becomes lower than a predetermined potential difference, said fuel cell and said electric double layer capacitor is made to a directly connected state.

19. (Withdrawn) A fuel cell power supply unit according to claim 18, wherein the reacting gas amount supplied to the fuel cell in said output state is determined based on the current-voltage characteristics of said fuel cell, the current-voltage characteristics of the capacitor, and the equilibrium reacting gas supply amount characteristics corresponding to the current-voltage characteristics of the fuel cell.

20. (Withdrawn) A fuel cell power supply unit according to claim 18, wherein the current-voltage characteristics of said fuel cell depend on an internal resistance of the fuel cell or an average internal resistance of the fuel cell within a predetermined output current range.

21. (Withdrawn) A fuel cell power supply unit according to claim 18, wherein the current-voltage characteristics of said electric double layer capacitor depends on the internal resistance of said electric double layer capacitor.

22. (Withdrawn) A fuel cell power supply unit according to claim 18, wherein the reacting gas supply amount supplied from said reacting gas supply system to the fuel cell is determined such that the response time reaching from the reacting gas amount at said predetermined output state to the equilibrium reacting gas amount after the variation of electrical load is shorter than the output assistance operation period by said electric double layer capacitor.

23. (Withdrawn) A fuel cell power supply unit according to claim 19, wherein the reacting gas supply amount supplied from said reacting gas supply system to the fuel cell is determined such that the response time reaching from the reacting gas amount at said predetermined output state to the equilibrium reacting gas amount after the variation of electrical load is shorter than the output assistance operation period by said electric double layer capacitor.

24. (Withdrawn) A fuel cell power supply unit according to claim 20, wherein the reacting gas supply amount supplied from said reacting gas supply system to the fuel cell is determined such that the response time reaching from the reacting gas amount at said predetermined output state to the equilibrium reacting gas amount after the variation of electrical load is shorter than the output assistance operation period by said electric double layer capacitor.

25. (Withdrawn) A fuel cell power supply unit according to claim 21, wherein the reacting gas supply amount supplied from said reacting gas supply system to the fuel cell is determined such that the response time reaching from the reacting gas amount at said predetermined output state to the equilibrium reacting gas amount after the variation of electrical load is shorter than the output assistance operation period by said electric double layer capacitor.

26. (Withdrawn) A fuel cell power supply unit according to claim 22, wherein the response time of said reacting gas supply system is set below the output assistance period by said output assistance operation period of said electric double layer capacitor.

27. (Withdrawn) A fuel cell power supply unit according to claim 23, wherein the response time of said reacting gas supply system is set below the output assistance period by said output assistance operation period of said electric double layer capacitor.

28. (Withdrawn) A fuel cell power supply unit according to claim 24, wherein the response time of said reacting gas supply system is set below the output assistance period by said output assistance operation period of said electric double layer capacitor.

29. (Withdrawn) A fuel cell power supply unit according to claim 25, wherein the response time of said reacting gas supply system is set below the output assistance period by said output assistance operation period of said electric double layer capacitor.

30. (Withdrawn) A fuel cell power supply unit according to claim 22, wherein a capacitance of said electric double layer capacitor is determined such that the response time of said reacting gas supply system is set below the output assistance period by said output assistance operation period of said electric double layer capacitor.

31. (Withdrawn) A fuel cell power supply unit according to claim 23, wherein a capacitance of said electric double layer capacitor is determined such that the response time of said reacting gas supply system is set below the output assistance period by said output assistance operation period of said electric double layer capacitor.

32. (Withdrawn) A fuel cell power supply unit according to claim 24, wherein a capacitance of said electric double layer capacitor is determined such that the response time of said reacting gas supply system is set below the output assistance period by said output assistance operation period of said electric double layer capacitor.

33. (Withdrawn) A fuel cell power supply unit according to claim 25, wherein a capacitance of said electric double layer capacitor is determined such that the response time of said reacting gas supply system is set below the output assistance period by said output assistance operation period of said electric double layer capacitor.

34. (Withdrawn) A fuel cell power supply unit according to claim 18, in which the reacting gas supply amount to said fuel cell is obtained based on a target generation command value after calculating a target output command value for a driving motor and a target generation command value of said fuel cell based on the input signals indicating the driving state of a vehicle obtained

at predetermined intervals, wherein the width of the variation of electrical load obtained from the difference between two successively obtained target generation command values is controlled so as to be within a predetermined range of the difference.

35. (Cancelled)

36. (Currently Amended) A fuel cell power supply unit comprising:

an electrochemical fuel cell;

an electric double layer capacitor, which is directly connected with the fuel cell; and

a controller programmed for supplying an excess supply amount of a reacting gas to the fuel cell when an output current of the fuel cell corresponds to a first output current (I_1)~~in advance of a variation in an electrical load~~ by,

determining an expected output current (I_2) based on one or more input signals indicative of acceleration of the vehicle,

~~after the variation in the electrical load(ΔI) of the fuel cell,~~ obtaining from data representative of a synthetic current-voltage characteristic (I_{all} vs. V_{out}) of the fuel cell an expected output voltage (V_2) corresponding to the expected output current (I_2),

obtaining from data representative of a current-voltage characteristic of the fuel cell corresponding to a minimal amount of reacting gas supplied to the fuel cell [[an]]a second output current ($I_{fc2'}$) corresponding to the expected output voltage (V_2),

obtaining a supply amount of reacting gas (Qa_1) corresponding to the second output current ($I_{fc2'}$),

determining the excess supply amount of the reacting gas based on the supply amount of reacting gas (Qa_1) corresponding to the second output current ($I_{fc2'}$), and

~~in advance of the variation of the electrical load,~~ supplying the reacting gas in an amount which includes the excess supply amount in addition to an equilibrium reacting gas supply amount ($Qa_{1'}$) when the output current of the fuel cell corresponds to the first output current (I_1).